REQUIREMENTS FOR

PUBLIC IMPROVEMENT PROJECT PLAN PREPARATION

DC6-001 INTRODUCTION. The following criteria is established to provide a uniform system of plan preparation that will aid the engineer in preparing plans for work within the City of Gardner.

DC6-002 GENERAL. All plans and specifications for public improvement construction shall be sealed by a professional engineer licensed in the state of Kansas and submitted to the office of the City Engineer for review. Subsequent to the review, the engineer will be notified of the approval of the plans as submitted, or of any necessary changes. (Refer to the section "Public Improvement Project Plan Submittal" for plan review procedures.)

Upon completion of the review and approval of the plans by the City Engineer, 5 sets of full size plan sets, 1 set of half size plan sets, 1 copy of the electric layout sheet, and 1 electronic copy of the plans in Autocadd must be submitted for signing and distribution.

The suggested plan sheet size is 22" x 36" or 24" x 36" with all sheets in a given set of plans being of the same size. Plan and profile shall be drawn on double or single plan and profile sheets to scales of one inch (1”) equals fifty feet (50’) horizontal by one inch (1”) equals ten feet (10’) vertical, unless otherwise approved by the city engineer for special cases.

The plans shall consist of:

1. Title Sheet
2. General Layout Sheet
3. Grading and Erosion Control Sheet
4. Electric Layout Sheet
5. Drainage Basin Map Sheet
6. Plan and Profile Sheets
7. Intersection Detail Sheets
8. Cross Section Sheets (Street Improvement Plans only unless otherwise required by the City Engineer.)
9. Standard Detail Sheets
10. Pavement Marking and Signage Sheet (as necessary)
11. Traffic Control Plan (as necessary)

Each sheet should contain a sheet number, including the individual sheet number and the total number of sheets, the engineer's seal, proper project identification and date.

DC6-003 TITLE SHEET. The following items shall be included on the title sheet:

1. Name of project or subdivision.
2. City project number (if applicable).
3. Section, ¼ Section, Township, and Range.
4. Index of sheets included in plans.

5. Summary of quantities table (may be included on this sheet or general layout sheet).
6. A vicinity map adequately showing project location in relation to major streets.
7. A summary of plan quantities of principal items, such as:
    - Pipe sizes, number of manholes, etc. (sanitary sewers)
    - Length of curb and gutter, square yardage or tonnage of asphaltic concrete pavement, etc. (streets)
    - Pipe sizes, number of inlets, etc. (storm sewers)
    - Pipe sizes and lengths, number of valves, etc. (water lines)
8. The project control bench mark (Permanent benchmark shall be a Johnson County Vertical Control Network Benchmark).
9. Name, address and telephone number of the consulting engineer and owner/developer.
10. List containing name and telephone number of each utility company.
11. Project design speed.
12. City Engineer's signature line.
13. Signature and stamp of Professional Engineer registered in the state of Kansas.

DC6-004 GENERAL LAYOUT SHEET. The following items shall be included on the general layout sheet for all improvement projects:

1. A legend of symbols shall be shown which shall apply to all sheets.
2. North arrow and scale. Scale of the general layout map shall be one inch (1") equals 100 feet (100'), unless otherwise approved.
3. Layout shall include names of subdivision, block designation, if any, lot designation, or proposed block and lots, all street names, and an accurate tie to at least one quarter section corner. An unplatted tract shall have an accurate tie to at least one quarter section corner.
4. Lot lines, subdivisions, buildings within 200' of the proposed facility (screened to 65%).
5. Boundary line of project area.
6. A list of general notes to the contractor to include at least those notes indicated in the "Procedure For Public Improvement Project Plan Submittal" section of this manual.
7. General layout of all utilities and easements.

DC6-005 GRADING AND EROSION CONTROL SHEET. The grading and erosion control sheet shall be drawn at a scale of 1"= max 100' (1"=20', 1"=50', or 1"=100' are acceptable) with match lines for multiple sheets when necessary. The following items shall be included on the grading and erosion control sheet:

1. Existing topographic features – trees, hedges, brush, buildings, pavement, utilities, fences, curbs, drives, sidewalks, inlets, manholes, valves, and other manmade objects - shown in ½ tone.
2. The current physical features (both natural and manmade) of the property and adjacent land within 50', including contours at vertical intervals of not more than 5' where the slope is greater than 10% and not more than 2' where the slope is less than 10%.
3. Proposed contours shown at the same contour interval as the existing contours.
4. Lot and subdivision lines with lots and blocks numbered per the plat of the subject subdivision.

5. Street centerline alignment with edge of pavement lines, edge of sidewalk lines, and back of curb lines.
6. North arrow and bar scale.
7. Street names, R/W lines, existing and proposed easements (show centerline and limits of the easements).
8. 2% minimum grading is required for positive drainage.
9. 100-year floodplain and stream buffers (if applicable).
10. Appropriate erosion control measures and applicable notes (may be shown on separate sheet).
11. The consultant shall also submit a copy of the application for an NPDES permit.
12. Limits of construction.

DC6-006 ELECTRIC LAYOUT SHEET. For subdivision plans, the Electric Division for the City of Gardner will provide the design engineer with a schematic of the electric and street lighting layout to be included in the plans. The plans shall include street crossings, proposed street lighting layout, proposed conduit, and proposed layout of feedthrough cabinets, transformers, etc. This sheet will be used by the Electric Division to install the electric infrastructure once plans are approved.

DC6-007 DRAINAGE BASIN MAP SHEET. The drainage basin map sheet shall be drawn to such a scale as to fit on one sheet where possible, but shall not exceed 1"=1000', and shall include the following information:

1. A plan view of the project.
2. A layout of all pipe systems with the structures numbered.
3. Boundaries of all basins (there should be a sub-basin for each inlet) shall be shown, and each basin and sub-basin shall be labeled.
4. A data table providing stormwater calculations (K, C, I, Q, Q_{total}, t_c, HGL, etc.) and pipe data (length, slope, diameter, full pipe velocity, etc.). The data table should also include 100-year calculations for emergency overflows.

DC6-008 PLAN AND PROFILE SHEETS. The following items shall be included on the plan and profile sheets for all improvement projects:

1. North arrows and scale.
2. Elevation and location of all applicable bench marks (Permanent benchmark shall be a Johnson County Vertical Control Network Benchmark).
3. Existing and proposed streets with names and widths.
   Construction limits.
4. Property lines properly identified as to existing or proposed lot, block and subdivision.
5. All existing and proposed utilities such as power, gas, oil, water, telephone, sewer, and other items shall be properly located in conformance with the best information available in the records of the owner of such facilities, or field location, and identified as to size, material, and type of construction.
6. All existing and known proposed improvements within 75 feet each side of center line shall be shown at their proper locations. This shall include such existing items as paved streets, curbs and gutters, driveways, culverts, fire hydrants, utility poles, trees, shrubs, fences, walls, houses, and other such items, and shall be identified as to

type, size, material, etc., as may be applicable. In case of new developments, some irrelevant items may be omitted.

7. All existing easement and right-of-way information recorded with the county.
8. Minor construction notes shall appear on the proper plan and profile sheets.
9. Locations and widths of existing and proposed sidewalks.

In addition, the following items shall be included on the plan and profile sheets for the particular type of improvement stated below.

STREETS.

1. Horizontal curve data, vertical curve data, stopping sight distances and design speed.
2. Gradient between vertical curves.
3. Center line stations.
4. Cul-de-sac and island radii.
5. Proposed drainage structures numbered and/or labeled.
6. Stations and grade at curb returns (at 1/4 points).
7. Profile shall show existing grade above center line as a dashed line, proposed finish grades or established street grades by solid lines.
8. Location of monument boxes.

STORM DRAINAGE.

1. Detailed alignment of the storm sewer, appurtenances, sizes of line, capacity, and other details relating to the storm drainage system including inlet station and top and invert elevations.
2. Proper ties into existing permanent facilities.
3. Distances between the storm sewer and other existing or future utilities in the right-of-way or drainage easement.
4. Drainage channel, slope and cross sections.
5. Existing and proposed street grades.
6. Proper elevations, slopes and lining for existing outfall ditches.
7. Energy dissipation at outlets (if rip rap is specified, label length, width, thickness, and stone size).
8. Locations of all bends and appurtenances.
9. Show size, slope and gauge (class) of each line on the profile.
10. Location, cross-section, capacity of, overflow swales. Show velocity in swale and erosion protection where necessary.
11. All utility crossings shall be shown on the profile view with approximate elevations given.

SANITARY SEWER.

1. Detailed alignment of the proposed sewer with the manhole designation, either by station and angle shown at each manhole or dimensioned ties to property lines at reasonable frequent control points to provide unquestionable locations of the sewer within street right-of-way or on private property.
2. The channel center line of waterways within 50 feet either side of center line of sewer shall be shown.
3. All manholes shall be shown with manhole designation station and invert elevations. Drop manholes shall be designated as such. Invert elevations shown shall be the invert of the pipe in and out of the manhole. Proposed finish grade

elevation of top of manhole shall be shown. Distance between manholes shall be shown as well as the gradient, pipe size, and type of material.

4. Results of all rock borings shall be shown at the proper locations.
5. Accurate elevations of either the first-floor surface or the basement floor surface shall be shown, and identified, for all existing and/or proposed structures for all building sites to be served by the proposed sewer system.
6. A uniform system of line and manhole designation shall be used subject to the approval of the City Engineer's office.
7. Station, slope and length of each stubline.
8. Profile shall show existing grade above center line as a solid line, proposed finish grades or established street grades by dashed lines, and shall show the flow line of any drainage channel, either improved or unimproved, within 50 feet either side of center line. Each line shall be properly identified. The proposed sewer shall be shown as double solid lines properly showing the height of the pipe.
9. All utility crossings shall be shown on the profile view with approximate elevations given.

WATER LINES.

1. Alignment of the proposed water line dimensioned from curb lines or right-of-way lines.
2. Designation by station of all fire hydrants and line valves.
3. Results of all rock borings shall be shown at the proper locations.
4. All utility crossings shall be shown on the profile view with approximate elevations given.

DC6-009 INTERSECTION DETAIL SHEETS. The intersection detail sheets shall show the intersections at 1"=20' or 1"=10'. The following items shall be included on the intersection detail sheets:

1. North arrow and bar scale.
2. Back of curb and face of curb lines and edge of pavement line.
3. Radius line for curb returns with length of radius labeled.
4. Storm inlets, manholes, other proposed items.
5. Plus station for start/stop of tapers, turn lanes, curb returns—with offsets where appropriate.
6. Top of curb elevations and stations every 25' with plus station, elevations and offsets at curb returns and at midpoint of curb returns.
7. Horizontal alignment data (same as Plan and Profiles).
8. Location of sidewalks, handicap ramps, with dimensions for sidewalks.
9. Street lighting poles, etc.

DC6-010 CROSS-SECTION SHEETS. The following items shall be included on the cross-section sheets:

1. Street cross-section at each station showing existing grade by dashed lines and proposed grade by a solid line. Cross-sections to show existing grade lines a minimum of 10 feet beyond right-of-way lines. Show cut and/or fill quantities at each cross-section.
2. Center line elevation of top of pavement.

3. Cross-sections shall be shown at all intersecting streets and driveways.
4. Channel cross-sections shall be shown for all drainage channel improvements.
5. Additional cross-sections shall be shown as required to clearly describe the extent of the grading operations.

DC6-011 PAVEMENT MARKING AND SIGNAGE SHEET. The pavement marking and signage sheet shall be typically drawn to scale at 1"=50'. The following items shall be included on the pavement marking and signage sheet:

1. North arrow and bar scale.
2. Legend.
3. Existing topographic features – trees, hedges, brush, buildings, pavement, utilities, fences, curbs, drives, sidewalks, inlets, manholes, valves, and other man-made objects—screened to 65%.
4. Horizontal alignment of the proposed streets, including centerline and stationing.
5. Proposed drainage structures and other proposed structures.
6. Proposed edges of pavement and sidewalk, and back of curb lines.
7. Station equation at all proposed intersections (including an intersection of a proposed street with an existing street).
8. Street names.
9. Proposed and existing right-of-way.
10. Construction limits.
11. Easements of all types, existing and proposed.
12. Proposed and existing street light poles.
13. Stationing of all proposed pavement markings.
14. Lane width dimensions.
15. Stationing and MUTCD number for all proposed signs.
16. General Notes that include but are not limited to:
    - All markings shall be in accordance with the latest edition of the MUTCD.
    - All existing markings that conflict with the proposed markings shall be completely removed.
    - The contractor shall maintain ALL existing signs not shown on the plans as to be removed.

DC6-012 TRAFFIC CONTROL PLAN SHEET. The traffic control plan sheet shall be provided as necessary. This plan shall be prepared by a certified traffic control consultant and shall be reviewed and approved by the City Engineer. The traffic control plan sheet shall include construction sequencing and overall phasing plan, work areas identified y shading and/or line patterns, construction notes describing each phase of construction, a detour plan (if applicable), etc.

DC6-013 STANDARD DETAIL SHEETS. Detail sheets shall be included to show all details of appurtenances, materials, and construction whether or not covered by the Gardner, Kansas, standards. Details shall conform to the City of Gardner standards and are to be drawn clearly and neatly with proper identifications, dimensions, materials, and other information necessary to ensure the desired construction.

DC6-014 CONSTRUCTION RECORD DRAWINGS. Construction record drawings for all public infrastructure shall be submitted to the City Engineer upon completion of the project and

prior to final acceptance of the project by the City of Gardner. The design engineer shall provide the city with two (2) sets of prints for all public improvement projects corrected to show the project as constructed and shall accurately and completely denote all changes made during the course of the work. Each sheet within the plans shall be clearly marked as "Conforming to Construction Records" and shall include the date of revision and certifications by the engineer.